June 27, 1939. O. LINDELL 2,164,250

ELECTRIC MOTOR

Filed Feb. 23, 1938

Fig. 1.

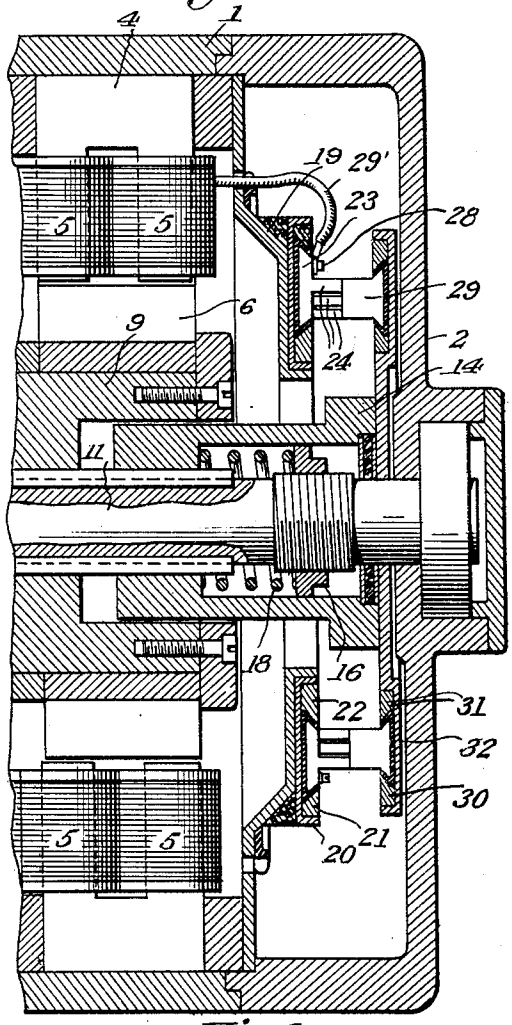


Fig. 2.

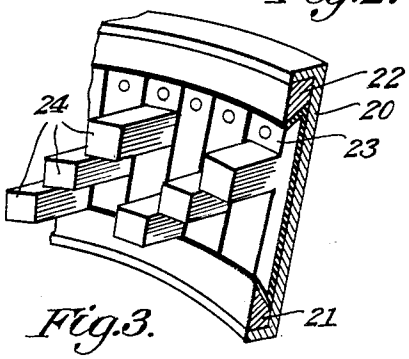


Fig. 3.

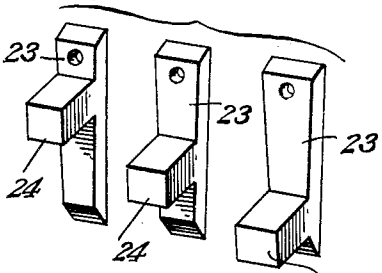


Fig. 4.

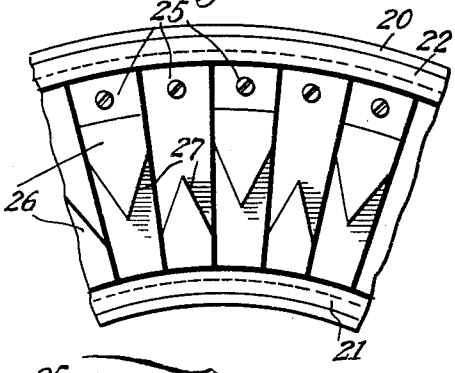


Fig. 5.

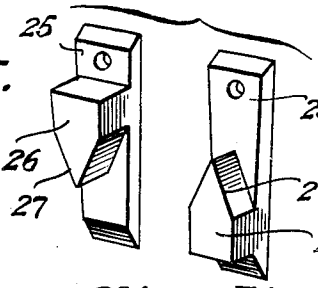
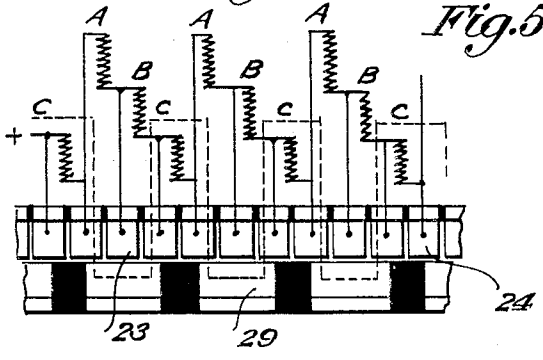


Fig. 6.



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2,164,250

UNITED STATES PATENT OFFICE

2,164,250

ELECTRIC MOTOR

Oliver Lindell, Shawnee, Okla.

Application February 23, 1938, Serial No. 192,147

3 Claims. (Cl. 172—36)

This invention relates to an electric motor of the type described in my patent entitled Electric motor, No. 2,112,852, dated April 5, 1938.

An object of the present invention is to improve the structure disclosed in said patent by the provision of novel magnet contacts for receiving the lead wire from a respective electro-magnet, these magnet contacts being so constructed as to eliminate arcing during coaction with the magnet shunting contacts disclosed in the above identified application.

A further object of the invention is to provide each three consecutive magnet contacts with contact lugs which are disposed in stepped relation relatively to each other so that air gaps exist between the magnet contacts sufficient to positively prevent arcing.

With the above and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawing forming part of this specification,

Figure 1 is a fragmentary longitudinal sectional view of an electric motor having magnet contacts constructed in accordance with the invention.

Figure 2 is a perspective view of certain of the magnet contacts shown in Figure 1.

Figure 3 is a perspective view of a series of three contiguous magnet contacts.

Figure 4 is a front elevation showing a plurality of modified magnet contacts.

Figure 5 is a perspective view of two contiguous magnet contacts of the modified form shown in Figure 4.

Figure 6 is a wiring diagram showing each magnet shunting contact bridging a plurality of magnet contacts.

Referring now to the drawing in which like characters of reference designate similar parts in the various views, 1 designates the stator shell, the same being closed at both ends by heads 2 provided with bearings for the rotor shaft 11. In the stator are mounted pole pieces, one of which is shown at 4, having thereon magnet coils 5. There are three annular sections of pole pieces A, B, and C shown diagrammatically in Figure 6, although any desired number may be employed.

The rotor comprises three annular series of armature sections, one of which is shown at 6. The rotor sections are fixed upon a hollow cylindrical core member 9. A hollow cylindrical casing 14 is splined upon the rotor shaft and houses a spring 18 which is tensioned by a nut 16 screw threadedly engaged with the shaft.

A dished annular supporting plate 19 is rigidly fixed to the stator and fixed to the plate is a magnet contact retaining plate 20 of channel contour. Retaining rings 21 and 22 are mounted on the retaining plate each having one edge beveled to retain the novel magnet contacts 23 forming the subject matter of this invention, and which will be later described in detail. The numeral 29 indicates magnet shunting contacts by which electrical contact is made with the electro-magnet coils 5 through the magnet contacts 23. 30 and 31 indicate wedge shaped retaining rings which serve to retain the magnet shunting contacts 29 on the channeled supporting plate 32 which is rigidly fastened to the casing 14 and revolves as a unit with the rotor. Tension of the spring 18 holds the magnet shunting contacts 29 in tight rubbing contact with the magnet contacts 23.

With the exception of the magnet contacts 23 the above described parts are the same as disclosed in my above identified patent application. The magnet contacts 23, as best shown in Figure 2 are provided with respective contact lugs 24 which are substantially rectangular in cross section and the lugs of each three contiguous contacts are disposed in stepped relation relatively to each other so that the lowermost lug will ride upon the lowermost area of the shunting contact 29, the intermediate one will ride upon the intermediate area of the shunting contact and the upper one will ride upon the uppermost area of the shunting contact, as best shown in Figures 1 and 6. Thus air spaces exist above and below each lug and between adjoining lugs so that arcing will be positively eliminated.

A modified form of the invention is shown in Figures 4 and 5 in which each magnet contact 25 is provided with a contact lug 26 having a substantially triangular extension 27. The extensions 27 of contiguous contacts are reversed, as best shown in Figure 5, so that a considerable space exists above and below each contact lug and between adjoining contact lugs as best shown in Figure 4 to prevent arcing. Each magnet contact is provided with a screw 28 to receive the lead wire 29' of a respective electro-magnet.

From the above description it is thought that the construction and operation of the invention will be fully understood without further explanation.

What is claimed is:

1. In an electric motor of the class described, an annular series of magnet shunting contacts, an annular series of magnet contacts opposite the shunting contacts, magnet lead wires connected to the magnet contacts, the magnet shunting contacts being adapted to bridge a plurality of the magnet contacts simultaneously, and lugs projecting from the magnet contacts having wiping engagement with the shunting contacts and arranged in stepped relation to provide air gaps between the lugs.

2. The combination with a motor in which magnet coils are arranged in groups of a plurality of coils, of an annular series of magnet shunting contacts, an annular series of magnet contacts, leads from said coils connected to respective ones of said magnet contacts, and lugs projecting from said magnet contacts and adapted to have wiping engagement with said shunting contacts, the lugs of the magnet contacts of each group of magnet coils being arranged in stepped relation with respect to each other in a radial direction and being spaced from each other in a circumferential direction to provide air gaps for preventing arcing.

3. In an electric motor, a stationary annular series of magnet shunting contacts, a rotatable annular series of magnet contacts, and lugs on the magnet contacts having wiping engagement with the shunting contacts, each lug being spaced from the next adjacent lug to provide air spaces in a circumferential direction and in a radial direction between adjoining lugs to prevent arcing, said lugs having extensions of substantially triangular contour, the extensions of contiguous contacts having their apices reversed in direction with respect to each other.

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